DETERMINATIONS OF ENDOCRINE DISRUPTORS IN ENVIRONMENTAL USING SPE AND GAS CHROMATOGRAPHY- TANDEM MASS SPECTROMETRY

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Background and Aims: Endocrine disrupting compounds (EDCs) include a wide variety of pollutants, namely substances of different sources of contamination: domestic, industrial and agricultural e.g. pesticides estrogens, heavy metals and plasticizers. The ECDs are present in the environment at low levels of concentration and they can only be determined by using a preconcentration technique[1]. Gas chromatography/mass spectrometry (GC-MS) is commonly accepted as one of the most powerful techniques for the separation, identification and quantification of EDCs, even in the nanogram range[2].
Methods: Chromatographic analyses were carried out in a Thermo GC ULTRA Gas Chromatograph Mass Spectrometer equipped with a ZB-XLB. High-purity helium at a constant flow rate of 1.3mL/min was used as carrier gas. An AI/AS 3000 auto injector was used. Injections (1µL) were made in the split/splitless mode. Samples were analyzed using the following oven temperature programme: initial temperature 60 C (held for 1 min), increased by 20 C/min to 200 C (held for 1 min), increased again by 5°C/min to 245°C and held at this temperature for 40 min.
Results: We have optimized the method by determining the following ECDs; Atrazine-desethyl, HCB, Atrazine-deuterated, Atrazine, Simazine, Lindane, Vinclozoline, Alaclhor, Malathion, Aldrin, α-Endosulfan, p.p`-DDE, Dieldrin, DDD, Endrin, o.p`-DDT, β-Endosulfan, Methoxychlor, Bifentrhin, Fenpropatrhin, Iprodione, λ-Cyhalothrin, Permethrin, β-Cyfluthrin, Cypermethrin, Fenvalerate and Deltamethrine all present good linearity.
Conclusions: The limit of detection achieved allows the determination above the legal limits.
References:
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